Unit Leader's and Instructor's Risk Management Steps for Preventing Heat Injuries

Risk Management is the process of identifying and controlling hazards to protect the force.

Possible Outcomes of inadequate climatic heat management:

Illness	Risk Severity
Heat Cramps	Marginal
Heat Exhaustion	Critical
Heat Stroke	Critical-Catastrophic
Water Intoxication (Over Hydration)	Critical-Catastrophic

The Five Steps of Risk Management are:

1 Identify Hazards

High heat category, especially on several sequential days (Measure WBGT when ambient temperature is over 75º F)

Exertional level of training, especially on several sequential days

Acclimatization (and other individual risk factors – see table below)

Temperature at night / rest overnight

Individual Risks for Heat Illness (The more factors, the higher the risk)

- **Not acclimatized** to heat (need 10-14 days to get trainees adequately acclimated)
- Exposure to cumulative days (2-3 days) of any of the following
  - Increased heat exposure
  - Increased exertional levels.
  - Lack of quality sleep
- Poor fitness
- Exceeds Body Fat Standard
- Minor illness (cold symptoms, sore throat, low grade fever)
- Taking drugs/ supplements/ dietary aids Ex: Allergy or cold remedies Ephedra supplement
- Use of Alcohol in the last 24 hours
- Prior history of heat illness (any heat stroke, or >2 episodes of heat exhaustion)
- Skin disorders such as heat rash and sun burn which prevent effective sweating
- Age > 40 years

2 Assess Hazards

- When ambient temperature is over 75º F, constantly assess the heat category (using WBGT)
- Know your soldiers! Identify early who will be at increased risk. Watch for inappropriate hydration (too much or too little)
- Constantly assess exertional level of work or training:

When planning training events, keep in mind:

1. **Time of day the training is conducted – morning is cooler**
2. **Location of training**
   - Sun vs. shade
   - Open vs. protection from wind - wind has cooling effect
3. **Clothing**
   - Training in MOPP gear?
4. **Where in training cycle**
   - Most Heat Injuries occur in the 2nd or 3rd week of Recruit training.
   - Acclimatization can take 7-14 days, depending on the physical condition of the trainee.
5. **Cummulative Effects**
   - Adjust the training schedule to minimize consecutive days of heavy physical training, especially if other heat stressors exist (eg. heat exposure and lack of quality sleep)

3 Develop Controls

- Establish unit SOPs and signals. Ensure all personnel are trained and follow SOPs for Heat Injury Prevention.
- Factor in the cumulative effects of sequential days of exposure to heat/exertion or lack of quality sleep in training schedule.
- Ensure soldiers are properly acclimated.
- Identify previous heat injuries. Ensure they have gone through the EPTS or MEB process and tag with red tape on ear protection case.
- If 1-2 soldiers develop any heat illness, stop all training and evaluate each soldier for early signs and symptoms of heat injury.
- Ensure all bulletin boards have Heat Injury Prevention posters and all leaders have Heat Injury Prevention aids.
- Plan communications, water, medical and evacuation support.
- Provide adequate hydration for *all* personnel (including Cadre and Drill Instructors)

continued

3 Develop Controls continued

- Consider using the Ogden Cord (parachute or 550 cord or shoelace tied on the uniform lapel) as a control measure. Recruits tie a knot in the cord each time they finish a canteen. Commanders may want to use color-coding to identify high-risk recruits, such as white cord for those on medications.
- Position WBGT at site of training
- Take WBGT readings hourly.
- Follow the Fluid Replacement and work/rest Guidelines below:

Fluid Replacement Guidelines for Warm Weather Training Conditions
Acclimatized (after approx two weeks training) Wearing BDU, Hot Weather

		Easy Work		Moderate Work		Hard Work	
Heat Category	**WBGT Index, (F°)**	**Work/ Rest**	**Water Intake (Qt/h)**	**Work/ Rest**	**Water Intake (Qt/h)**	**Work/ Rest**	**Water Intake (Qt/h)**
1	78-81.9	NL	½	NL	¾	40/20 min	¾
2 (Green)	82-84.9	NL	½	50/10 min	¾	30/30 min	1
3 (Yellow)	85-87.9	NL	¾	40/20 min	¾	30/30 min	1
4 (Red)	88-89.9	NL	¾	30/30 min	¾	20/40 min	1
5 (Black)	>90	50/10 min	1	20/40 min	1	10/50 min	1

- The work-rest times and fluid replacement volumes will sustain performance and hydration for at least 4 h of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/h) and exposure to full sun or full shade (±¼ qt/h).
- NL= no limit to work time per hour.
- Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.
- **CAUTION:** Hourly fluid intake should not exceed 1½ quarts.
- Daily fluid intake **should not exceed 12 quarts.**
- If wearing body armor add **5°F** to WBGT in humid climates
- If wearing NBC clothing (MOPP 4) add **10°F** to WBGT

Easy Work	Moderate Work	Hard Work
• Weapon Maintenance • Walking Hard Surface at 2.5 mph, <30 lb Load • Marksmanship Training • Drill and Ceremony	• Walking Loose Sand at 2.5 mph, no Load • Walking Hard Surface at 3.5 mph, <40lb Load • Calisthenics • Patrolling • Individual Movement Techniques. i.e. low crawl, high crawl	• Walking Hard Surface at 3.5 mph, ≥40 lb Load • Walking Loose Sand at 2.5 mph with Load • Field Assaults

4 Implement Controls

- Decision to accept risk is made at the appropriate level.
- Identified controls are in place.
- Monitor and enforce hydration standards. Encourage frequent drinking.
- Monitor and enforce eating of meals. Ensure all meals are eaten during the meal break.
- Execute random spot checks by Senior NCOs, Drill Sergeants and Cadre.
- Update WBGT status hourly
- Enforce battle buddy checks. Battle buddies should be aware of each other's eating, drinking and frequency of urination.
- Observe soldiers drinking required amounts not to exceed **1 ½** quarts per hour or **12** quarts per day.
- Ensure soldiers have adequate time to eat and drink at their meals.
- Encourage soldiers to eat all meals. Table salt may be added to food when Heat Category is high. Salt tablets are *not* recommended.
- Move fruits from meals to between meal snacks, if possible. Provide salty snacks, if possible.
- Ensure soldiers are well hydrated before starting training. Ask about urine; urine is clear if well hydrated.
- Adhere to work rest cycle in high heat categories. Rest in shade.
- Plan placement of leaders to observe and react to heat injuries in dispersed training. Do random spot checks of possible heat illness by Drill Sergeants and Cadre.
- Urine must be clear. If yellow, hydration is not adequate.
- Unblouse pants from boots.
- Keep clothing loose at the neck, wrists, and lower legs.

5 Supervise & Evaluate

- Enforce SOPs
- Conduct spot checks of cadre. Do cadre have current WBGT? Are cadre implementing work/rest/drink cycles? Make on-the-spot corrections. Lead by example.
- Conduct spot checks of recruits. Ask recruits questions while observing their mental status and physical capabilities. Look out for common signs and symptoms which can rapidly progress to serious signs and symptoms.
- If 1-2 recruits suffer heat injury, stop all training and evaluate each soldier for early signs and symptoms of heat injury.
- When controls fail, heat injuries occur. The ability to recognize heat injury is paramount. Take immediate action if any heat injuries are observed or suspected. Stop-rest-cool then evaluate in accordance with warning signs and symptoms. If in doubt, evacuate.

Warning Signs and Symptoms of Heat Illness and Water Intoxication

Indications of possible Heat Illness

More Common Signs / Symptoms	Immediate Actions
• Dizziness • Headache • Nausea • Unsteady walk • Weakness • Muscle cramps	• Remove from training • Allow casualty to rest in shade • Take sips of water • While doing the above, call for Medic evaluation of the soldier (Medic will monitor temperature and check for mental confusion) • If no medic is available call for ambulance or Medevac
Serious Signs / Symptoms	**Immediately call Medevac or ambulance for emergency transport while doing the following:**
• Hot body, high temperature • Confusion (Mental Status Assessment) • Vomiting • Involuntary bowel movement • Convulsions • Weak or rapid pulse • Unresponsiveness, coma	• Lay person down in shade with feet elevated until Medevac or ambulance arrives • Undress as much as possible • Pour cool water over person and fan • Give *sips* of water while awaiting ambulance (if conscious) • Monitor airway and breathing until ambulance or Medevac arrive

5 Supervise & Evaluate continued

Indications of possible Water Intoxication (Over Hydration)

Signs and Symptoms	What to do:
Confusion Lethargy Vomiting	**Ask these questions to the soldier or battle buddy:** 1. Has soldier been eating? Check rucksack for # of MRE's left. 2. Has soldier been drinking a lot? (suspect water intoxication if soldier has been drinking constantly). 3. How often has soldier urinated? (frequent urination seen with water intoxication; infrequent urination with heat illness) 4. What color is urine (clear urine may indicate over hydration)

If soldier has been eating, drinking and urinating a lot, yet has these symptoms, **immediately call Medevac or ambulance for emergency transport**

Criteria for Evacuation for Heat Illness and Water Intoxication (Over Hydration)

Evacuate if ANY of the following exist:

- 2 or more episodes of vomiting
- Any unresponsiveness
- Mental status change (confusion, combative, or lethargic)
- Core temperature > 104º F (If unable to obtain temperature, feel body for excessive heat)
- Convulsions
- Involuntary bowel movement

Mental Status Assessment

An important sign that the soldier is in a serious life-threatening condition is the presence of mental confusion (with or without increased temperature). Anyone can do a mental status assessment asking some simple questions.

Call for emergency Medevac or ambulance if *any* of the following exist:

What is your name?
(Does not know their name.)

What month is it? What year is it?
(Does not know the month or year.)

Where are we/you?
(Does not know the place where they are at.)

What were you doing before you became ill?
(Does not know the events that led to the present situation.)